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GOLF CLUB AND CLUB HEAD

FIELD OF THE INVENTION

The present invention relates to an improved golf club head for use in golf clubs, and more particularly for use in chippers and wedges.

BACKGROUND OF THE INVENTION

Historically, golfers have found it difficult to accurately propel a ball onto the fairway or green from the rough, that grass typically located adjacent to the fairway or green and characterized by a longer length of grass. This difficulty occurs because of the tendency of the club head to turn or twist when it makes contact with the rough, whether it be high grass or shorter, wirery grass. Such twisting or turning of the club head prohibits the striking face of the club head from making solid contact with the golf ball, often leading to inconsistent and undesired results.

Typically, the club heads used for advancing golf balls from the rough to the fairway or green, such as pitching wedges or chippers, have blunt, dull or rounded leading edges with relatively large sole-to-striking face angles. These designs often succumb to the problem of club head twisting or turning when contact is made with the rough. This problem can be alleviated by a design that allows the club head to cut through the grass behind the golf ball.

While some club heads have been designed with sharp leading edges, the design of these club heads is impractical for cutting through high grass. For example, Clements (U.S. Pat. No. 3,003,768) shows a club head with a short lip at the leading edge. This

club head, as revealed in the patent, was designed for the purpose of advancing a ball from sand or water. The purpose and design of the sharp edge in Clements is to assist in striking the ball by scooping an obstruction such a water or sand into a slot designed to funnel the obstruction through to the rear side of the club head. Clements does not reveal a true knife-like edge with a small sole-to-striking face angle to facilitate cutting through rough. In addition, the width of the sole resulting from the angle between the scooping face and the sole inhibits a grass cutting action.

Likewise, British Patent No. 1,078,412 shows a cutting edge as part of the hosel of a golf club head. This edge does not form a part of the blade of the golf club head. The edge, therefore, does not foster a cutting action by the striking face as it proceeds through troublesome rough.

The current designs for club heads used in advancing balls from the rough reveal the need for an improved club head that will provide controlled golf shots from the rough.

SUMMARY OF THE INVENTION

As herein described, the present invention provides for a golf club head that includes a hosel and a metal blade. The metal blade includes a knife-like leading edge at the juncture of a sole and a striking face, a sole with a rounded protrusion, and a rear face that extends from the sole's protrusion to a trailing edge of the striking face.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a front elevation view of a golf club head in accordance with the invention.

FIGURE 2 is a cross section view of the golf club head of Figure 1 taken along the section line 2-2 of Figure 1.

FIGURE 3 is a cross section view of one embodiment of the golf club head in accordance with the invention..

FIGURE 4 is a rear elevation view of one embodiment of the golf club head in accordance with the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to Figures 1 and 2, a golf club head is designated generally at **10**, in accordance with a preferred embodiment of the present invention. The end of the club head where the hosel **14** is located is referred to as the heel end. The end of the club head opposite the heel end is referred to as the toe end. The leading end of the club head is generally the downward most portion of the club head. The trailing end of the club is generally the upward most portion of the club head.

The golf club head includes a hosel **14** and a metal blade **16** and may be attached to a shaft **12** (shown broken to reduce the size of the figure). The shaft **12** may have a handle portion at one end (not shown) and be fitted to the hosel **14**. The hosel **14** connects the metal blade **16** to the shaft **12**.

The metal blade **16** comprises a striking face **18**, a sole **20** and a rear face **22**. The striking face **18** meets the sole **20** at a knife-like leading edge **24**. The striking face **18**

is planar and meets the rear face **22** at a trailing edge **26**. The rear face may extend in an arc **28** from the trailing edge **26** and then become planar and substantially parallel to the striking face **18**. The rear face **22** meets the sole **20** at a rounded protrusion **30** that runs substantially parallel to the knife-like leading edge **24** along the surface of the golf club head opposite the striking face **18**. Beginning at the leading end of the protrusion, the sole **20** is planar, ultimately meeting the striking face **18** at the knife-like leading edge **24**.

The metal blade **16** is comprised of a durable metal that can maintain a hardened edge, for example a hardened steel. A durable metal will better allow the knife-like leading edge **24** to maintain its cutting edge through repeated uses.

In a preferred embodiment, the metal blade **16** has disposed within it at least one metal dowel **32** that is located substantially forward of and substantially parallel to the rounded protrusion **30** of the sole **20**. Alternatively, the metal blade **18** may include two metal dowels **32** disposed in the metal blade **18** and located substantially on each side of the apex of rounded protrusion **30** of the sole **20** and substantially parallel to such protrusion **30**, with the leading dowel **32B** disposed toward the knife-like leading edge **24** and the trailing dowel **32C** disposed toward the trailing edge **26.** In addition, it is preferred that the metal dowels **32** are cylindrical, with the leading dowel **32B** being smaller in diameter than the trailing dowel **32C**. The preferred diameter of the leading dowel **32B** is 0.25 inch or less and the preferred diameter of the trailing dowel **32C** is between 0.375 inch and 0.4375 inch. Additionally, each metal dowel **32** is embedded approximately 0.25 inch from the center of the edge of the toe end of the club head **10**

and 0.25 inch from edge of the metal blade **16** that is attached to the hosel **14** of the golf club head **10**. The metal dowels **32** may be made from a metal having a density greater than that of the metal from which the rest of the club head is formed. For example, the metal dowels **32** could be made from lead, tungsten or steel. The inclusion, location and density of these metal dowels **32** promote a desired swing pendulum action.

In a preferred embodiment of the invention, the angle **a** between the striking face **18** and the sole **20** is between 20° and 30°. This narrow angle **a**, in combination with the knife-like leading edge **24**, permits the club head **10** to cut through the rough, thereby allowing the striking face **18** to make more solid and accurate contact with the golf ball.

The knife-like leading edge **24** may resemble various knife shapes, such as a straight edge or a serrated edge. An example of a serrated embodiment is depicted in Figure 4. In such a serrated embodiment, a distance between the troughs **34** of the serration is between approximately 0.1875 inch and 0.250 inch. This serration can help improve the effectiveness of the knife-like leading edge **24** as it cuts through the rough.

In a preferred embodiment, the striking angle **b** between the striking face **18** and a vertical plane **100** in which the shaft **12** and hosel **14** of the golf club are positioned when they are in a substantially upright address position is between 45° and 60°, where the vertical plane **100** is perpendicular to the ground level horizontal plane **110** and parallel to the leading edge **24** of the club head **10**. A higher angle **b** promotes a higher but shorter shot. A smaller angle **b** allows for a longer shot but provides for a lower ball flight trajectory as is well known in the golf industry.

In one preferred embodiment, the thickness of the metal blade **16** between the

striking face **18** and the planar portion of the rear face **22** is between 0.8125 inch and 0.875 inch. In addition, the length of the club head **10** from the knife-like leading edge **24** to the trailing edge **26** at the line **38** where grooves on the striking face terminate on the toe end of the club is between 2.375 and 2.5 inches. Also, the distance from the intersection of the hosel **14** meets the metal blade **16** to the toe end is between 4.00 inches to 4.75 inches.

The angle **c** between the ground level **110** and the apex or downward most point of the rounded protrusion **30** of the sole **20** is approximately 10° when the shaft **12** and hosel **14** of the golf club are in a substantially upward address position in the vertical plane **100** perpendicular to the ground level horizontal plane **110** and parallel to the leading edge **24** of the club head. This protrusion **30** helps prohibit the knife-like leading edge **24** from cutting too deeply into the ground by providing a bounce mechanism as the club head **10** proceeds downward. As the angle **b** between the striking face **18** and the above described vertical plane decreases and the striking face **18** becomes more upright, the distance between the apex of the rounded protrusion **30** of the sole **20** and the striking face **18** will necessarily increase to maintain the angle **c**.

Another embodiment of the golf club head is illustrated in Figure 3. In this embodiment, the rear face **22A** gradually curves after the arc **28A** to meet the protrusion **30A** of the sole **20A**. Further, in this embodiment, the protrusion **30A** also gradually curves to form into the planar region of sole **20A**. Like other embodiments, angles **a**, **b**, and **c** are maintained as described above to insure the leading edge's **24** effectiveness and help prevent the leading edge **24** from digging too far into the ground during its

downward progression.

An abrasive coating can also serve as the striking face **18** in one embodiment of the invention. Such a coating may improve spin on a golf ball struck by the club head **10** by facilitating better contact between the club head **10** and the golf ball. Spin is a very desirable result for most wedge shots. Thus, a golfer may enjoy the added benefit of increased spin along with the advantages of the invention already described. This abrasive coating may be formed, for example, by embedding particles of a material such as diamond into the striking face of the club head.

Although the invention has been described in terms of exemplary embodiments, it is not limited thereto. Rather, the appended claims should be construed broadly to include other variants and embodiments of the invention that may be made by those skilled in the art without departing from the scope and range of equivalents of the invention.